

In the Claims

1. (Currently Amended) A probe for improved homogeneity in magnetic resonance (MR) imaging, the probe comprising:
 - an RF coil for receiving MR data;
 - a collapsible housing enclosing the RF coil and constructed for insertion into a subject to be imaged;
 - a homogeneity enhancing material disposable within the collapsible housing;
 - a hollow shaft extending from the collapsible housing and protruding out from the subject; and
 - a retainer connected to the hollow shaft and positioned in proximity to the housing that secures the RF coil within the subject to be imaged.
2. (Original) The probe of claim 1 wherein the homogeneity enhancing material has a magnetic permeability similar to that of the subject.
3. (Previously Presented) The probe of claim 1 wherein the collapsible housing is an expandable membrane to allow the RF coil to receive MR data from a wider area of the subject when expanded with the homogeneity enhancing material than when collapsed.
4. (Original) The probe of claim 1 wherein the homogeneity enhancing material includes one of a gel and a liquid.
5. (Original) The probe of claim 1 wherein the homogeneity enhancing material includes a material having a magnetic permeability similar to that of water.
6. (Original) The probe of claim 1 wherein the homogeneity enhancing material includes a perfluorocarbon material.
7. (Original) The probe of claim 3 wherein the homogeneity enhancing material expands the collapsible housing after insertion into the subject to be imaged.
8. (Previously Presented) The probe of claim 7 wherein the collapsible housing is free of air when expanded by the homogeneity enhancing material.

9. (Original) The probe of claim 1 formed as an endorectal probe.
10. (Previously Presented) The probe of claim 1 wherein the retainer is an inflatable retainer that secures the RF coil within the subject to be imaged when inflated with the homogeneity enhancing fluid.
11. (Currently Amended) An MR imaging apparatus comprising:
a plurality of gradient coils positioned about a bore of a magnet to impress a polarizing magnetic field;
an RF transceiver system;
an RF switch controlled by a pulse module to transmit RF signals;
an RF coil assembly configured for internal MR image acquisition and having at least one RF coil disposed within a housing that is constructed for insertion into a subject;
a homogeneity enhancing fluid disposable within the housing to improve homogeneity during internal MR image acquisition; ~~and~~
~~an electronically controlled pump to inflate the housing with the homogeneity enhancing fluid~~
a hollow shaft extending from the housing and protruding out from the subject, the hollow shaft configured to allow the homogeneity enhancing fluid to pass therethrough and into the housing; and
a handle connected to the hollow shaft to position the at least one RF coil and the housing within the subject.
12. (Original) The MR imaging apparatus of claim 11 wherein the housing is an expandable membrane and the homogeneity enhancing fluid causes the expandable membrane to inflate.
13. (Original) The MR imaging apparatus of claim 11 wherein the homogeneity enhancing material has a magnetic permeability similar to that of the subject.
14. (Original) The MR imaging apparatus of claim 11 wherein the homogeneity enhancing fluid includes a perfluorocarbon material.

15-18. (Canceled)

19. (Original) The MR imaging apparatus of claim 11 further comprising a retainer filled with the homogeneity enhancing fluid to secure the at least one RF coil within the subject.

20. (Currently Amended) A method of using an MR imaging device with improved homogeneity comprising:

positioning an RF coil within a housing that is capable of being inserted within an imaging subject;

positioning the RF coil within the imaging subject in proximity to a region-of-interest by way of a handle;

~~attaching a pump to the housing to inflate the housing with a homogeneity enhancing material;~~ and

filling the housing with ~~the~~ a homogeneity enhancing material, wherein the filling further comprises:

drawing the homogeneity enhancing material from a fluid reservoir and into a supply tube;

forcing the homogeneity enhancing material through a hollow shaft connected to the supply tube; and

depositing the homogeneity enhancing material into the housing.

21-22. (Canceled)

23. (Previously Presented) The method of claim 20 wherein the homogeneity enhancing material comprises a perfluorocarbon material

24. (Previously Presented) The method of claim 20 wherein the homogeneity enhancing material includes one of a gel and a liquid.

25. (Previously Presented) The method of claim 20 wherein the homogeneity enhancing material has a magnetic permeability similar to that of the imaging subject.

26. (Currently Amended) A kit for an MR imaging device with improved homogeneity comprising:

an RF coil;

a flexible housing configured to contain the RF coil therein and further configured to be inserted within an imaging subject;

a supply of a homogeneity enhancing material to fill and expand the flexible housing after insertion into the imaging subject; and

a retainer positioned external to and in contact with the imaging subject to secure ~~that secures~~ the RF coil within the subject to be imaged.

27. (New) The kit for an MR imaging device of claim 26 wherein the retainer is one of a solid retainer and an inflatable retainer.

28. (New) The MR imaging apparatus of claim 11 further comprising a control means to inflate the housing with the homogeneity enhancing fluid.

29. (New) The MR imaging apparatus of claim 28 wherein the control means comprises a syringe.

30. (New) The MR imaging apparatus of claim 28 wherein the control means comprises an electronically controlled pump.

31. (New) The method of claim 20 further comprising attaching a pump to the housing to inflate the housing with the homogeneity enhancing material.

32. (New) The method of claim 31 further comprising attaching an automated inflation control to control the inflation of the housing with a homogeneity enhancing material.